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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,425	01/07/2005	Michael Stewart Griffith	033963-014	5697

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EXAMINER

DOAK, JENNIFER L

ART UNIT	PAPER NUMBER
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2872

NOTIFICATION DATE	DELIVERY MODE
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01/29/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/520,425	Applicant(s) GRIFFITH ET AL.	
	Examiner Jennifer L. Doak	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 November 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-23, 25-28 and 31-33 is/are pending in the application.
- 4a) Of the above claim(s) 3, 7, 16-23 and 26-28 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 5, 6, 9-15, 25 and 31-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/26/07 has been entered.

Specification

The title of the invention is not descriptive. Specifically, statements concerning the general type or nature of the entire system or its components that are common to most other similar systems that are known in the art do not suggest the point of novelty, to which the title should at least allude. Although statements of general system types and so forth are important for contextualizing the novelty, the title should also be directed to encompass what Applicant considers as the point of novelty claimed. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

Claims 1, 9, and 12 are objected to because of the following informalities: in claim 1, it appears that a verb is missing: "...one or more passive flexible support elements arranged to provide a supporting surface on which the self-deforming mirror, wherein ..."; in claim, 9, the adverb form should be changed to an adjective form: "...elements are formed as integrally parts

if the holder..."; in claim 12, there are two commas after the preamble. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

These claims recite that the compliance of the support elements is adjusted according to the position of the support element. This implies that the compliance is actively varied. However, the specification seems to teach that the particular degree of compliance of each support element varies (i.e. is different) depending upon the particular position of said support element. Accordingly, the limitations in question appear to be misdescriptions of the present invention. Appropriate correction and/or clarification is required. For examination purposes, "is adjusted" in claim 12 will be treated as "varies."

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 5, 6, 9-15, 25, and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plante (US 4655563) in view of Clemino (US 4670338).

Regarding claims 1 and 6, Examiner makes the following findings of fact: Plante discloses a mirror structure comprising: a self-deforming mirror (Fig. 3: 10) mounted on a passive flexible support structure (16, epoxy as at col. 5, lns 37-43) the support structure comprising, one or more passive support elements (16) arranged to provide a supporting surface on which the self-deforming mirror (Figs. 1 and 3)), wherein the support structure is arranged to enable a deformation response in the self-deforming mirror mounted thereon (Title); and the option of using epoxy to affix element 16 (col. 3, lns 18-22). Plante does not explicitly disclose

that the supports are “flexible” or “compliant”. Plante and Clemino are related as mirrors. Clemino discloses the flexibility of resulting from an epoxy type glue (col. 5, lns 37-43), therefore imparting flexibility to element 16. Such a material enables the absorption of stresses or reduction of deformation (col. 7, lns 43-50).

Therefore, Examiner finds that it would have been obvious to an ordinarily skilled artisan at the time of invention to use a flexible epoxy adhesive as taught by Clemino as the epoxy disclosed by Plante in order to enable the absorption of stresses or reduction of deformation.

Regarding claim 2, 5, 9, the combination further discloses the plurality of discrete flexible support elements (Plante, Fig. 1: 16) are spatially arranged to support the self-deforming mirror from below (Fig. 1), with each of the support elements having an end shaped for providing support to the self-deforming mirror (Figs. 1, 3: 10) and a flexible portion that connects the supporting end of the support element to a body portion (20) of the support structure; wherein each of the support elements is positioned so as to be in supportive contact with a different electrode (34) of the self-deforming mirror when mounted thereon (note that electrodes 34 are necessarily formed on the surface); the support elements are formed as integrally parts of the body portion of the support structure (note that integral is sufficiently broad so as to encompass the joined structures shown in Plante).

Regarding claims 10-12 and 15, the combination does not explicitly disclose that the compliance of compliant material selected to form at least a portion of each of the support elements varies according to an established position of the support element in the support structure; the distance of the respective support element from the edge of a supported mirror substrate; the position of the support element in the support structure; varying the compliance of

the compliant material used to form the support element. However, these variances are seen as inherent in the combination. With respect to compliance in relation to positioning of the support elements (including near the edge and within the support structure), since Plante it is disclosed that Plante is a deformable mirror, it is noted that different locations on or within the mirror structure would have varying stresses on the support structures relative to the deformation, and it is apparent that these stresses would result in varying compliance, which therefore must be present for the device to function as intended.

Regarding claims 13 and 14, the combination does not explicitly disclose that the compliance of compliant material selected to form at least a portion of each of the support elements varies according to varying the length of the support element; the cross-sectional area of the support element. However, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art, *In re Aller*, 105 USPQ 233 (C.C.P.A. 1955). Benefits of such optimization in this case can include reduced distortion, increased life expectancy of the mirror system, or better image quality.

Therefore, Examiner finds that it would have been obvious to an ordinarily skilled artisan at the time of invention to optimize the ranges of length and cross-sectional areas of the support elements to reduce distortion, increase life of the mirror system, or improve image quality.

Regarding claim 25, the combination further discloses a reflective surface (Plante, Fig. 1: 14) provided on a substrate (10) and a layer of deformable material (i.e., epoxy) attached to the substrate that is operable to deform the mirror.

Regarding claims 31-33, the combination further discloses that required deformation response for the self-deforming mirror includes a required resonant frequency (Plante, col. 1, lns. 41-43) for the self-deforming mirror when mounted on the support structure; a required deformation response for the self-deforming mirror includes a required stroke characteristics (e.g., col. 2, lns. 9-18; col. 5, lns. 30-42) for the self-deforming mirror when mounted on the support structure; wherein the self-deforming mirror is a bimorph (see above: having both bandwidth, which is related to frequency, and stroke, which is displacement) self-deforming mirror having at least one layer of deformable material (14, 10).

Response to Arguments

Applicant's arguments filed 9/24/07 have been fully considered but they are not persuasive.

Applicant argues that the 112 rejection is traversed; the Plante-Clemino combination does not disclose a passive flexible support (citing Plante elements 22 and 24), but active support mounts instead.

First, Applicant gives no explanation or argument supporting the traversal of the 112 rejection, however, it is noted that perhaps Applicant intended to amend claim 12 as well as 10, 11, and 13-15.

Second, in both this and the prior Action, the passive support element identified by Examiners was Plante element (16). These “buttons” are described as support for support the actuators (col. 3, lns. 18-39) and the mirror (Figs. 1 and 3). Element 16 is attributed no activity except as “support.” Ostensibly, since Plante attributes control of actuation to elements 18 and not to elements 16, elements 16 are passive rather than active.

Allowable Subject Matter

Pursuant to the reasons set forth in a previous Action, claim 8 is allowed.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer L. Doak whose telephone number is 571-272-9791. The examiner can normally be reached on Mon-Thur: 7:30A-5:00P, Alt Fri: 7:30A-4:00P (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JD
1/17/08


Stephone B. Allen
Supervisory Patent Examiner